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08/162,407

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US005554512A

#14

United States Patent [19]**Lyman et al.**[11] **Patent Number:** **5,554,512**[45] **Date of Patent:** **Sep. 10, 1996**[54] **LIGANDS FOR FLT3 RECEPTORS**[75] **Inventors:** **Stewart D. Lyman**, Seattle; M.
Patricia Beckmann, Poulsbo, both of
Wash.[73] **Assignee:** **Immunex Corporation**[21] **Appl. No.:** **243,545**[22] **Filed:** **May 11, 1994****Related U.S. Application Data**[63] Continuation-in-part of Ser. No. 209,502, Mar. 7, 1994,
abandoned, which is a continuation-in-part of Ser. No.
162,407, Dec. 3, 1993, abandoned, which is a continuation-
~~in-part of Ser. No. 111,758, Aug. 25, 1993, abandoned,~~
which is a continuation-in-part of Ser. No. 106,463, Aug. 12,
1993, abandoned, which is a continuation-in-part of Ser. No.
68,394, May 24, 1993, abandoned.[51] **Int. Cl.⁶** **C12N 15/19; C07H 21/04**[52] **U.S. Cl.** **435/69.5; 435/69.1; 435/172.1;**
435/240.2; 435/252.3; 435/320.1; 530/351;
530/399; 536/23.5; 935/13; 424/85.1[58] **Field of Search** **536/23.5; 530/350,**
530/351, 399; 435/69.1, 69.5, 69, 7, 240.2,
320.1, 172.1, 252.3; 935/13; 424/85.1[56] **References Cited****U.S. PATENT DOCUMENTS**

5,185,438 2/1993 Lemischka 536/23.2

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J. G. Flanagan et al. Cell 63:185-194, 1990.

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Primary Examiner—Stephen G. Walsh*Assistant Examiner*—Lorraine M. Spector*Attorney, Agent, or Firm*—Stephen L. Malaska[57] **ABSTRACT**

Ligands for flt3 receptors capable of transducing self-renewal signals to regulate the growth, proliferation or differentiation of progenitor cells and stem cells are disclosed. The invention is directed to flt3-L as an isolated protein, the DNA encoding the flt3-L, host cells transfected with cDNAs encoding flt3-L, compositions comprising flt3-L, methods of improving gene transfer to a mammal using flt3-L, and methods of improving transplantations using flt3-L. Flt3-L finds use in treating patients with anemia, AIDS and various cancers.

21 Claims, No Drawings